

Analysis of Weekly Newsletters: Initial Report

Executive Summary

Questions of Interest

- What are some general trends regarding the weekly newsletters' metrics (open, click, bounce and unsubscribe rates)?

Statistical Analysis

- Correlations between the metrics
- Scatterplots of the metrics vs. various factors

Takeaways

- Clicks are positively correlated with opens, but negatively correlated with unsubscribes.
- The start of the COVID pandemic seemed to have caused a temporary spike in engagement.
- The next two reports, "Trends in the Open Probability" and "Trends in the Click Probability," will delve further into how various factors affect the open and click rate.

Overview of the Data Used

We focus on 54 newsletters, sent roughly weekly in the years 2019 and 2020. For this initial report, we look at four aggregated metrics for the newsletters: the open, click, bounce, and unsubscribe percentages.

The definition of the metrics are as follows:

$$\text{Open \%} = \frac{\text{number of contacts who opened the newsletter}}{\text{number of contacts sent to}} \times 100\%$$

$$\text{Click \%} = \frac{\text{number of contacts who clicked a link in the newsletter}}{\text{number of contacts sent to}} \times 100\%$$

$$\text{Bounce \%} = \frac{\text{number of contacts who could not be reached}}{\text{number of contacts sent to}} \times 100\%$$

$$\text{Unsubscribe \%} = \frac{\text{number of contacts who used newsletter to unsubscribe}}{\text{number of contacts sent to}} \times 100\%$$

We also examine the following characteristics of the newsletters:

- Trend over the date newsletter was sent out (2019-01-01 to 2020-12-31).
- Whether newsletter was sent before or after start of the COVID pandemic on 2020-03-12.
- Time of day newsletter was sent out (6:30 am to 8:40 pm).

- Length of subject by number of characters.

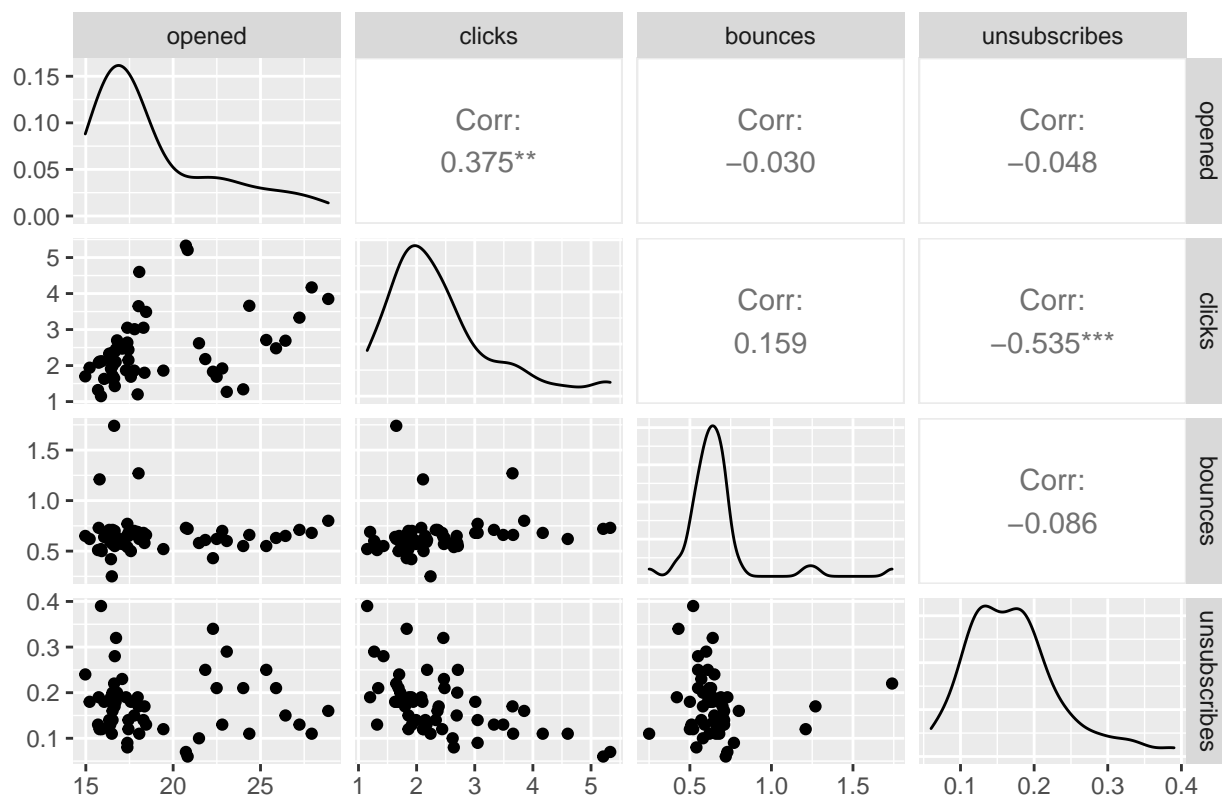
Below are 5 example newsletters from the dataset, i.e. the 5th, 8th, 25th, 35th, and 47th newsletters sent out.

	datetime	opened	clicks	bounces	unsubscribes
5	2019-05-01 15:21:00	17.97	1.20	0.69	0.19
8	2019-08-05 07:50:00	16.66	1.43	0.55	0.28
25	2020-06-05 07:50:00	17.38	2.64	0.54	0.08
35	2020-08-19 07:05:00	16.53	1.99	0.57	0.14
47	2020-11-11 06:51:00	18.30	3.05	0.68	0.14

	contacts_sent_to	covid	mins_since_midnight	subject_length
5	10333	Before		75
8	10219	Before		79
25	11478	After		53
35	11782	After		76
47	13031	After		68

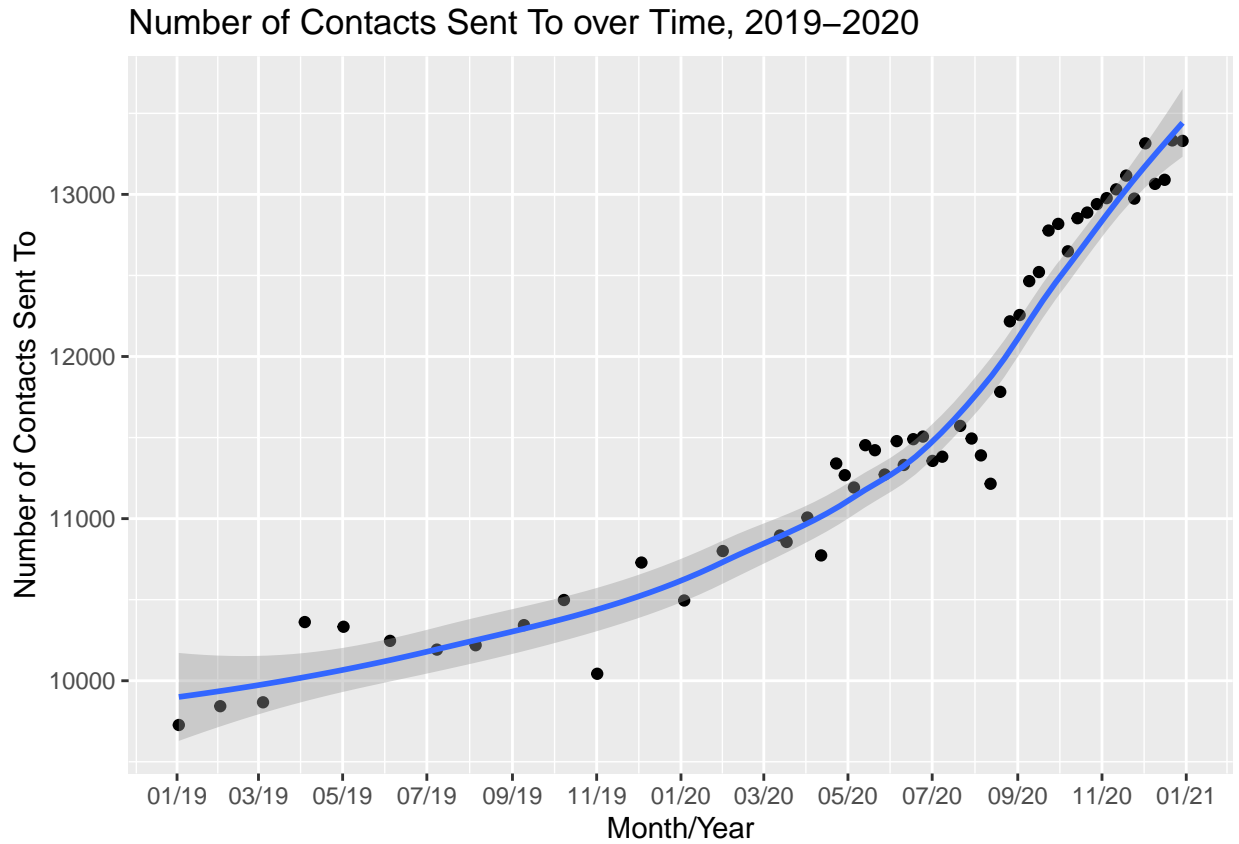
Correlation of the Metrics

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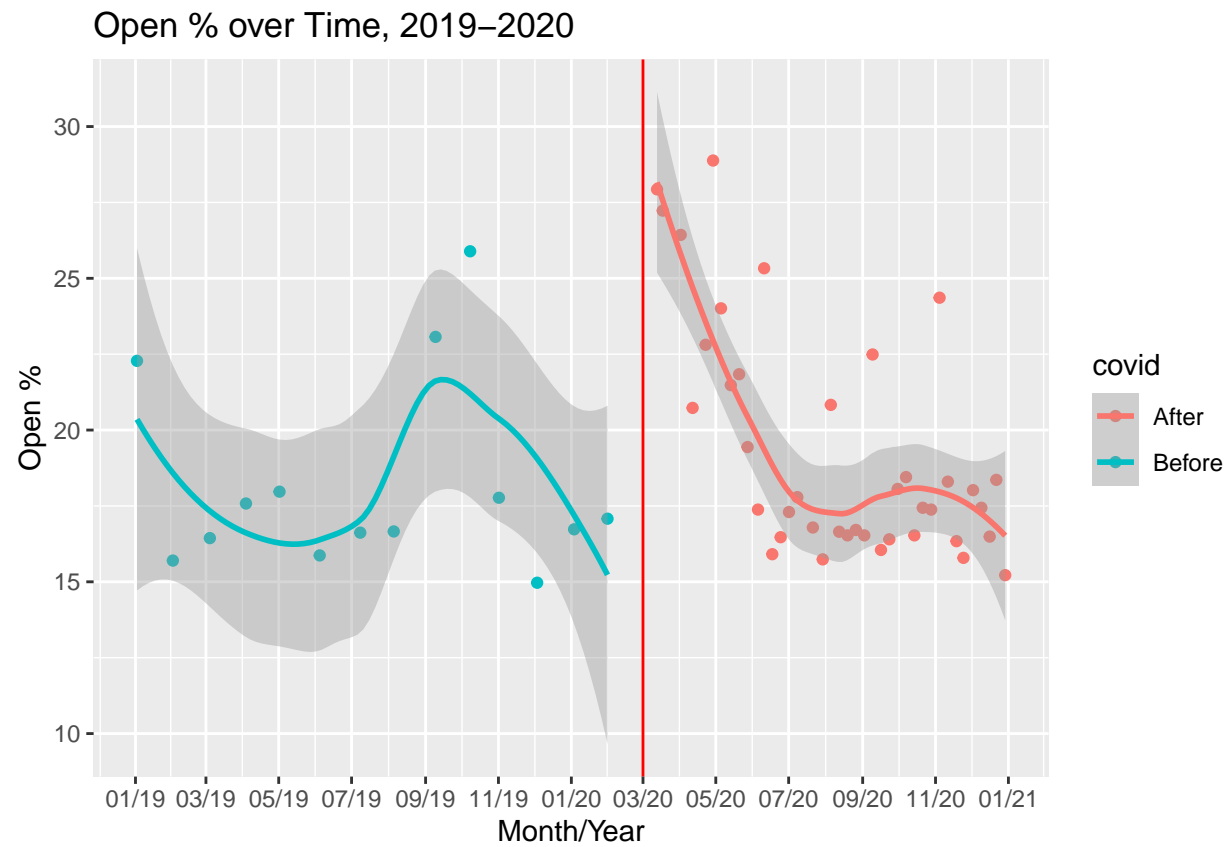


There are two significant correlations: a positive one between opens and clicks, and a negative one between unsubscribes and clicks.

Summary Statistics over Time, 2019-2020

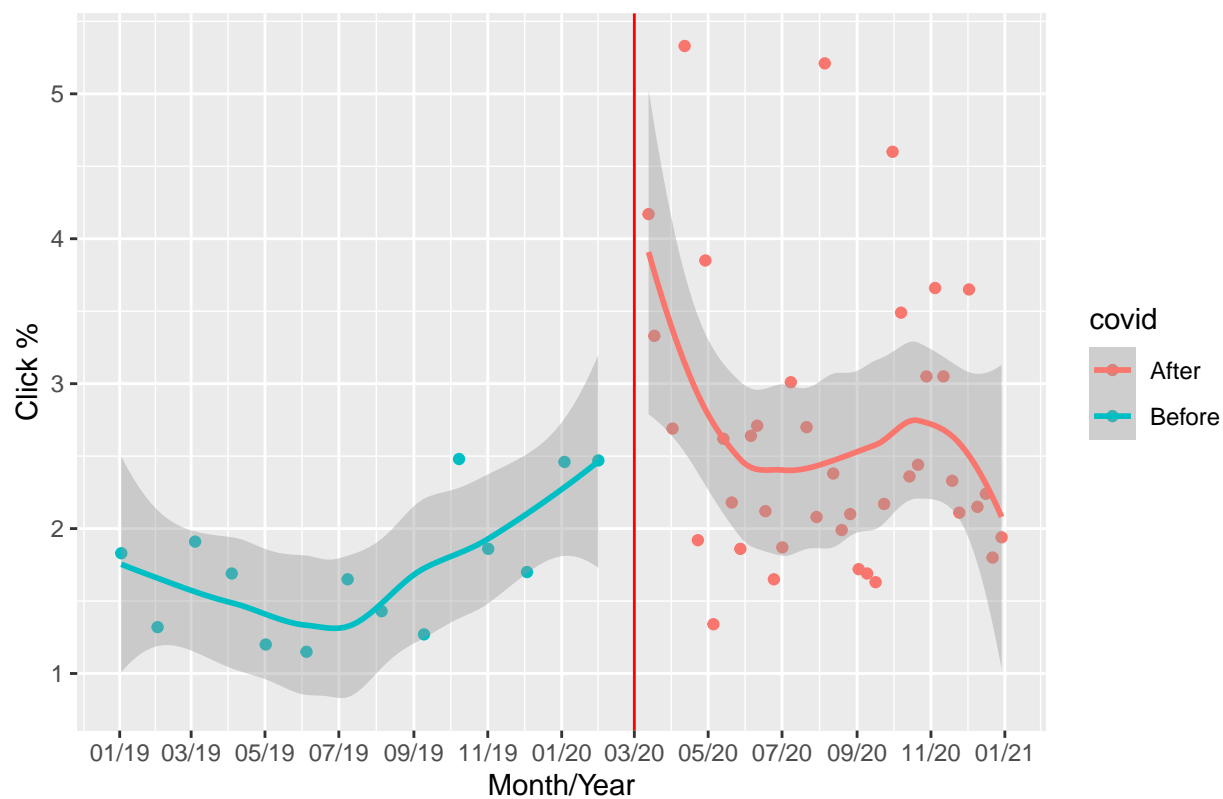


When did the pandemic start changing things? The March 12 weekly newsletter was the first one to mention the COVID-19 pandemic and remote volunteering opportunities.

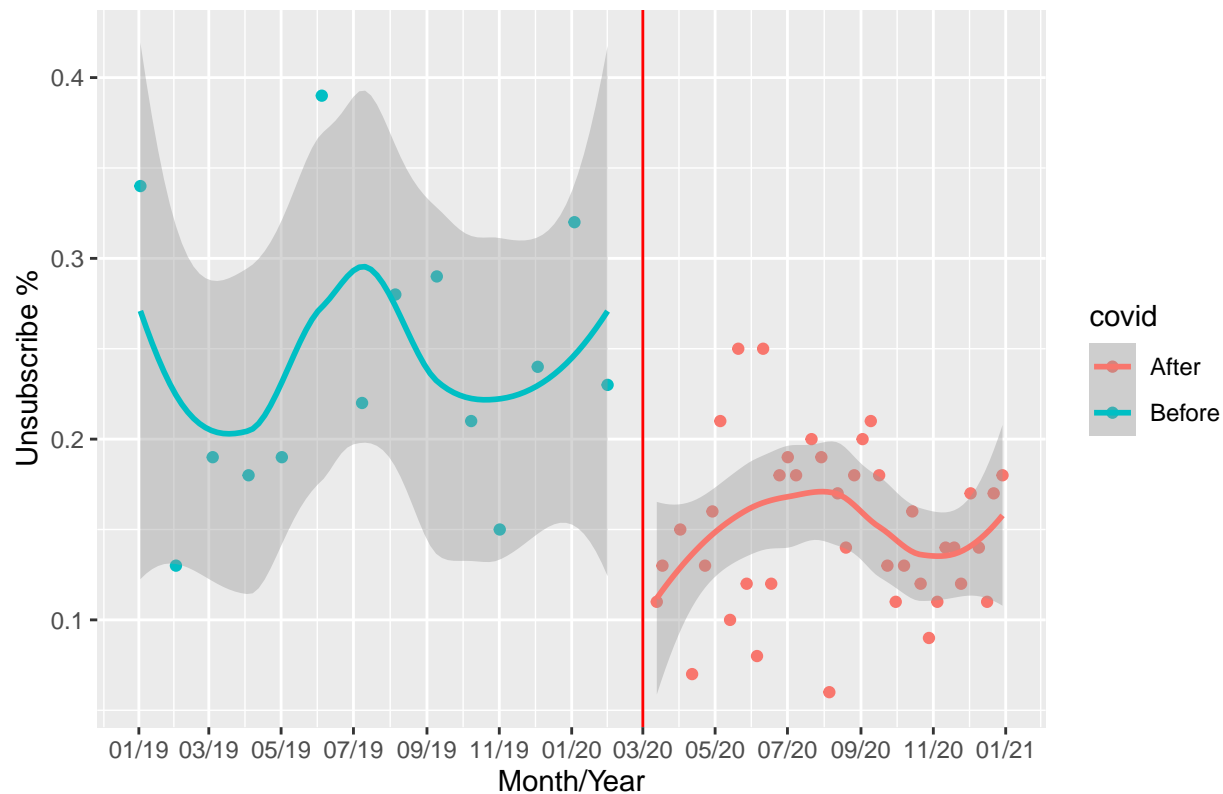


There is a spike in the open % after March.

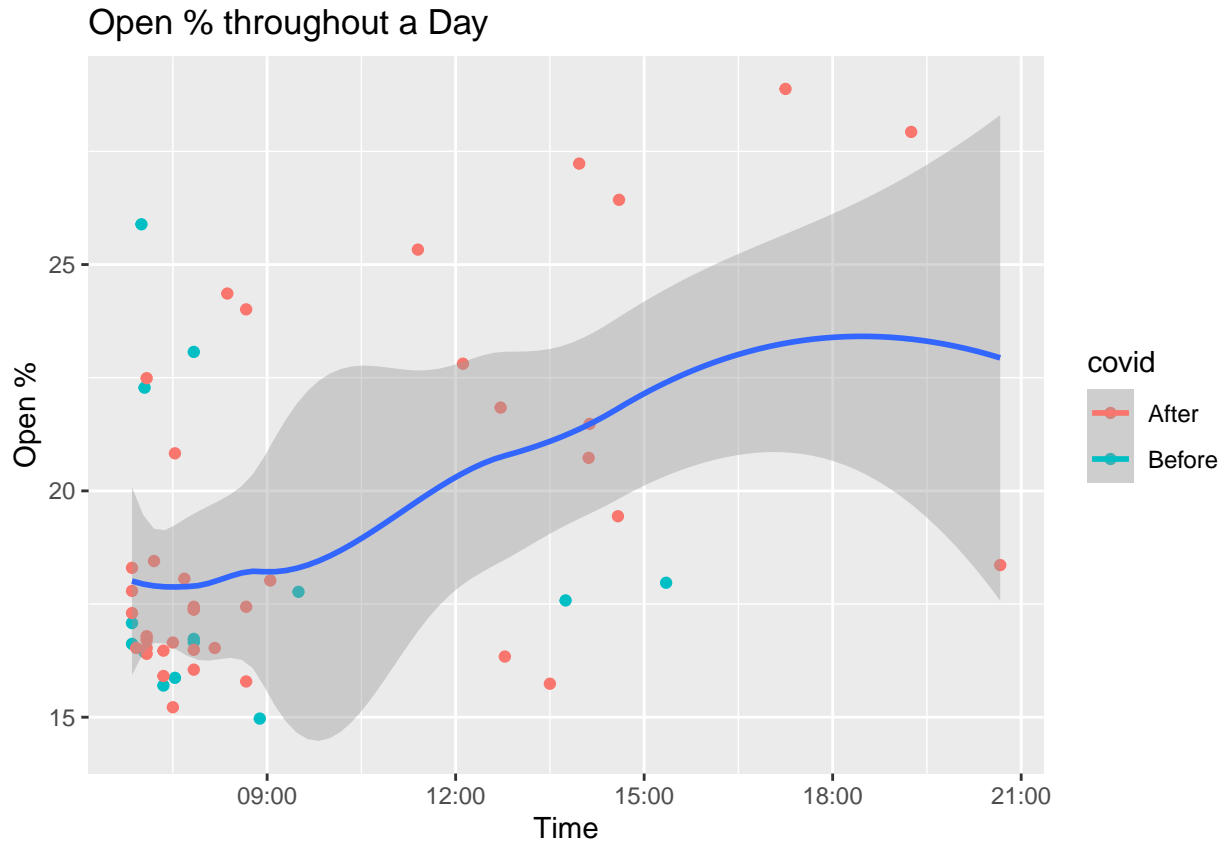
Click % over Time, 2019–2020



Unsubscribe % over Time, 2019–2020



Summary Statistics throughout a Day



There may be a slight upward trend.

Effect of Subject Headings

